

Response to Reviewers' Critiques

This is a revised grant request for "Environmental Strategies for Violence and AOD Prevention." All three reviewers of our previous submission noted that it addressed important issues related to violence and noted several strengths. *The proposed research will increase our understanding of specific individual and environmental factors linked with increased exposure and lay a foundation for future investigations to test the hypothesis that violence can be prevented and controlled thru environmental modifications. Thus this project addresses an important area that is both timely and of major significance in our understanding of the role that environmental factors may play in the risks associated with exposure to violence.* The reviewers also made a number of insightful suggestions to improve the quality of the proposed research project. We appreciate receiving this thoughtful review and have modified the research plan and integrated their suggestions into our revised submission. We have consolidated and highlighted the concerns and provided responses below and in the proposal. Major revisions within the application are indicated by a change of typeface to 11 point Arial font. (This is an example of 11 point Arial.)

In response to reviewers' positive response to the environmental assessments and to augment the potential importance of this component, we have expanded the scope of work for the environmental assessments. What was referred to as Phase One is now referred to as Study 1 which includes an environmental assessment of two randomly selected unit blocks within each of the 277 ecologically defined neighborhoods of Baltimore City. This is an increase of surveyed blocks from the stratified sample of 100 unit blocks proposed in the original application. This revised approach will give us information on all of the neighborhoods within our defined sampling frame of Baltimore City and also increase the precision with which we can establish metric qualities of the proposed neighborhood-rating instrument. In addition, having this information on the entire sampling frame will aid future intervention efforts which target environmental factors.

Phase Two of the original application, a household survey of residents and subsequent development of action plans to target environmental factors (where most of the weaknesses were noted), has been significantly revised and is hereafter referred to as Study 2. Study 2 now utilizes prospectively gathered data from a random sample of Baltimore City school children that are rich in current and historical data on violence and AOD exposure. The data are gathered through the Baltimore Prevention Program (BPP) conducted by the Johns Hopkins University. Data on the BPP youth who are currently in tenth grade are available annually from first grade to the present. Data collection, which continues annually, is funded through one year post high school. We propose to intentionally rate the Baltimore City unit blocks on which these youth reside to document environmental features. We will then link these features with individual-level violence and AOD exposure available in the BPP data to estimate the correlation of individual level violence with our measured neighborhood characteristics. Since these youth receive all of the assessments proposed in the original application, theoretically important individual-level information will be available through use of the BPP data rather than collecting the data through door-to-door canvassing. Considering that the unit of analysis for Study 2 is the individual, we will not need to assess all youth in the neighborhood, as originally proposed.

In response to reviewers' concerns, we have opted to focus this initial effort on the environmental assessments of neighborhoods and the association between childhood exposure to violence and AOD activity and neighborhood characteristics. This will pave the way for subsequent work developing, applying, and refining approaches to environmental prevention. These revisions to the project alleviate many of the reviewers' criticisms of Phase II while providing equivalent information outlined in the original application that will lay a foundation to test the hypothesis that violence can be prevented thru environmental modification. The original third aim, related to developing a plan of action with community input has been eliminated and the first two original aims have been reordered so that Aim 1 now relates to Study 1 and Aim 2 relates to Study 2. The timeline in Section D.11 has been revised to reflect the modifications in the work plan and the length of the grant has been shortened from five to three years. Our responses to specific concerns follow.

1. *Most of the weaknesses are in the second phase of the study involving interviews with a random selection of caregivers and their children, including...lack of clarity regarding the role of the Community Advisory Board, and the need for process evaluation to focus on feasibility issues.*

The primary goal of the household survey was to collect information from resident youth and their caregivers in order to link environmental factors identified in Phase One with increased reports of violence and AOD exposure among residents. The key research question is: Are their observable and measurable environmental characteristics linked with increased reports of violence and AOD exposure? The proposal has been modified and Section D.4 (pp. 60) now outlines a revised plan that includes rating unit blocks of BPP participants and linking youth responses from the BPP follow-up with our objective neighborhood ratings. This addresses the selection of caregivers and children as well as the need for process evaluation to assess feasibility.

In the original proposal we opted to include a Community Advisory Board (CAB) in recognition of the difficulty in bringing about environmental change without participation of key stakeholders from the community. Additionally, because our plan was to pilot the environmental approach as a demonstration that could be adopted by and implemented on a larger-scale by local agencies and community members, community participation was included. Because reviewers' comments suggest that our objectives were too expansive, we have therefore chosen to narrow the scope of work for this project and take advantage of the BPP sample to integrate what is learned from the environmental assessments with youths' reports of violence and AOD exposure. We opted therefore to eliminate the CAB in this application.

1. *Lack of clarity and specificity regarding the (individual) measures and how they are linked to the aims and hypotheses*

The Conceptual Model, depicted in Figure 1 (page 58), provides an overview of the framework for this proposal. In the original application no hypotheses were explicated stated, however three specific hypotheses to be tested in Study 1 and three hypotheses in Study 2 have been added to Section D.1 (page 57) immediately following the conceptual model. They are:

Study One Hypotheses:

H1: There are discrete domains of neighborhood disorder and decay.

H2: The domains and degree of neighborhood disorder are quantifiable.

H3: There is seasonal and time-of-day variation in the degree of detectable neighborhood disorder.

Study Two Hypotheses:

H1: There is a direct relationship between neighborhood physical environment and youth reports of community violence and AOD exposure.

H2: The relationship between neighborhood environment and youth community violence and AOD exposure will be mediated by caregiver characteristics including parental management and parental perception of the neighborhood.

H3: The relationship between neighborhood environment and youth community violence and AOD exposure will be mediated by youth characteristics including affiliation with deviant peers, non-community violence and AOD exposure, and youth perception of the neighborhood.

An elaboration of these hypotheses and their relationship to the larger schema of disorder theories are included in Section D.1 (page 57). Additionally, there are several analyses of alternative and more elaborate pathways that mediate violence and AOD exposure proposed in the analytic plan under sub-heading D.7.4 'Subsidiary Analyses' (page 69).

2. *While the youth variables and corresponding measures are nicely laid out in Table 2, some questions about the measures exist... The specific psychometric details of these measurements are necessary and provision of copies of the instruments in the appendices would be helpful.*

Table 2 has been elaborated and now clearly identifies the source of each assessment. The proposed assessments in both the original and this application are derived from the BPP study data collection, which is conducted face-to-face via Audio Computer Assisted Self-Administered Interview (ACASI). Additional detail on assessments is included in the proposal in section D.5 (page 61) with more elaborate information on the BPP assessments included in Appendix C.

3. *Dr. Holder will chair the Scientific Advisory Board (SAB)... but he has recently retired and...a question about his access exists.*

Restructuring the work plan has eliminated the need for a formal SAB. Thus, Dr. Holder and other Board members are no longer included in the project. We have, however, retained Senior Scientist Dr. Voas as a Science Advisor since he has a long history of community based work and management of large projects and is located in the same office as the PI. He will mentor Dr. Furr-Holden and, because of his Senior Scientist K-Award from NIAAA, he comes to the project at no-cost. In addition, we have changed the role of Dr. Ialongo, PI for the BPP follow-up, from consultant to a co-investigator. Dr. Mair has Dr. Arria has been kept as consultants because of their experience with high-risk youth, community violence, and AOD exposure. They both have a long-standing professional relationship with the PI and work in close proximity to both PIRE and Baltimore City. Note reviewers' comment: *Drs. Arria and Ialongo round out a highly capable team of researchers.*

4. *Concerns about confidentiality of assessment procedures need to be addressed.*

As the proposed assessments and subsequent violence and AOD exposure information will come from the BPP, the human subjects section has been revised to reflect the BPP protocol and a copy of the BPP human subject approval is included in Appendix C.

5. *The team would be much stronger if it included someone with the expertise of the researchers cited.*

Dr. Ralph Taylor has been added as a consultant to the project. He has expertise in the theories cited and has conducted a 20-year study of the decay and decline of Baltimore neighborhoods (see Taylor, 2000). In addition, consultant Dr. Julie Mair recently published a summary of relevant work in the areas of environmental crime and violence prevention. This article is included in Appendix A.

6. *The budget for the first year does not match...interviewers'.30 FTE does not seem adequate for year two. It does not seem necessary to include travel for three scientific conferences during the first year of the project...Similarly travel to three conferences during years two thru four is not sufficiently justified... There is also concern regarding requested expenditures during project years four and five, principally those related to the "preparation and submission" of a subsequent R01 application.*

The budget has been modified to reflect changes to the research plan, and as such has been condensed to three years. Because of the increased number of blocks to be surveyed, four data collection teams (of two persons each) have been budgeted at .60FTE each. By increasing the number of teams, it will be possible to survey the blocks within the months allotted for both summer and winter data collection periods. Conference travel has been reduced to one conference in Year One and three in each of Years Two and Three in order to ensure that findings reach the various relevant audiences including prevention, AOD researchers, and public health. Calculation of man-hours and translation into FTE has been detailed in the budget justification. Budgetary details are consistent throughout the proposal. Time for preparation and submission of a subsequent R01 application has been omitted.

In summary, the revised application integrates and addresses reviewers concerns. As currently proposed, this work while smaller in overall scope, will form the basis for more extensive future investigations that will involve community- level environmental prevention modeling and programming.

RESEARCH PLAN

ENVIRONMENTAL STRATEGIES FOR VIOLENCE AND AOD PREVENTION

A. SPECIFIC AIMS

The proposed project seeks to provide contextual insight on violence and alcohol and other drug (AOD) exposure among urban youth within selected communities by identifying environmental indicators linked with increased violence and AOD exposure. The goals of this proposal are to classify both individual- and community-level distributions and determinants of violence and AOD exposure in order to lay the groundwork for future community action targeted at environmental features within communities. To achieve these goals a classic epidemiologic approach will be used to randomly select urban neighborhood block groups. Multiple objective neighborhood ratings on these blocks will be conducted to (a) clarify the environmental contexts in which youth live and experience violence and AOD exposure, and (b) provide insight on environmental factors which promote or sustain elevated levels of exposure within neighborhoods.

The two specific aims of this study follow:

1. To identify community-level indicators theoretically linked to increased youth exposure to community violence and AOD activity.

Objective neighborhood ratings will be conducted by trained raters to describe and classify community factors theoretically linked with the frequency and severity of community violence and AOD exposure. Metric properties of the scale including validation of theoretical subscales, inter-rater reliability, and test-retest reliability will be determined.

2. To clarify the association between the community-level indicators and the incidence, and prevalence of violence and AOD exposure in a sample of urban adolescents.

Using data from the Baltimore Prevention Program (BPP), a sample of high-risk, urban adolescents and their caregivers, we will identify the strength of association between neighborhood environment characteristics and youth reports of violence and AOD exposure. We will also identify personal characteristics among youth associated with increased levels of community violence and AOD activity and specify the mediating influence of parental management and affiliation with deviant peers.

This work is guided by several theoretical frameworks that aid in our understanding of community violence and AOD exposure. First, the Social Cognitive Behavioral Model purports that there is a dynamic interaction between an individual, his or her cognitions and behaviors, and the environment. Second, the family of Disorder Theories proposes that neighborhood disorder (e.g., broken windows) signals disregard for neighborhood environment and in turn promotes further damage, more severe crimes, and heightened fear of crime among community residents. Third, the Opportunity Theory further adds that opportunities for crime exist and can be blocked by environmental manipulation. In the proposed investigation, we will model the influence of neighborhood environmental decay on violence and AOD exposure among youth. This work will guide future community-level environmental preventive interventions geared to reduce the occurrence of community violence and AOD exposure among youthful urban populations. As such, it will provide a base of empirical data for convening scientists with local stakeholders to address urban public health issues among community residents.

B. BACKGROUND AND SIGNIFICANCE

1. Statement of the Problem: Youth Violence and AOD Exposure

In 1999, 550,000 violent crimes occurred against youth within their own communities. In addition, homicide was the leading cause of death among African Americans aged 15 to 19 and the third leading cause for African Americans aged 10-14. African-American males have the highest rates of homicide in the United States and have shown steady increase over the past decade (Anderson, 2002). Recent estimates from the 2001 National Household Survey on Drug Abuse (NHSDA) found alarming rates of youth who reported engaging in violent behavior in the past year. Nearly 8% of youth reported attacking others with the intent to seriously hurt them, whereas 15% and 18.9%, respectively, reported group-against-group fighting and engagement in a serious fight at work or school (SAMHSA, 2002).

Baltimore stands as an example of the continuing problem of violence faced by urban centers across the county. Twenty-three youth aged 17 and younger were murdered in Baltimore during calendar year 2000. At the same time, 6,190 juveniles were arrested, and of these arrests, 1,717 (27%) were for assaults. School statistics are equally alarming. During the 1998-1999 and 1999-2000 school years, 2,786 children were arrested by the Baltimore City School Police; and a total of 4,735 offenses by school-aged youth were documented, 18 of which involved firearms. Tragically, a large percentage of these offenses were assaults, robberies, sex offenses, bomb threats, weapon possessions, drug offenses, and trespassing (Baltimore Rising, 2001).

Seventy-two percent of the youth crime, violence, and delinquency in Baltimore City occur in three, primarily African-American, Baltimore communities: East Baltimore, West Baltimore, and Northwest Baltimore (Baltimore Rising, 2001). This concentration of crime within minority communities reflects a national disparity in youth violence between African Americans and all other racial/ethnic groups including minority counterparts. Several factors are associated with the elevated risks among African-American youth. Urban African-American communities are host to an array of socially mediated environmental vulnerabilities including decayed neighborhoods, substandard housing, social isolation, and violence arising from their environment (Clubb et al., 2001; Browne et al., 2001). Preventive interventions are needed that not only address the individual-level risk factors, but also effectively intervene on adverse environmental conditions that promote and sustain these behaviors.

AOD use also persists as a problem both nationally and locally. In 2001, an estimated 15.9 million Americans were active illicit drug users (SAMHSA, 2002). This represents an increase from the estimated 6% in 1999 and 2000 to more than 7% in 2001. Among youthful populations aged 12 to 17, nearly 11% were active illicit drug users. This is an increase from the 9.7% observed in 2000 (SAMHSA, 2002). Within Maryland during 2001, 10.4% of youth aged 12 to 17 reported use of illicit drugs within the past month, and 15.7% report recent use of alcohol (SAMHSA, 2002).

There is a large degree of overlap in violence and AOD exposure. In 2001, the estimated proportion of youth aged 12 to 17 who engaged in two or more violent behaviors and who also reported illicit drug use was 40.4%. Additionally, 52% of these youth also reported alcohol use in the past year. These estimates far exceed the 16.5% of non-violent youth who reported illicit drug use and the 29.9% who reported alcohol use in that same year (SAMHSA, 2002). In addition, findings from a cross-national comparison of co-occurring community violence exposure and drug use suggest that violence exposure and drug use as one of its consequences is a worldwide urban phenomenon. Specifically, in a cross-sectional survey of adolescents in Antwerp, Belgium; Arkngelsk, Russia; and New Haven, Connecticut, levels of reported smoking, alcohol use, marijuana use, and hard drug use increased with adolescent exposure to violence (Vermeiren, Schwab-Stone, Deboutte, Leckman, & Ruchkin, 2003). Although further clarity of the causal

pathways linking violence and AOD exposure is needed, it is clear that a significant association between the two exists. According to Patterson's model of deviance, there is a general underlying propensity for deviant behavior mediated in part by parental management and social environment. The expression of this propensity is best viewed as a frequency measure; namely, there are youth who engage in little or no deviant behaviors, youth who engage in a few behaviors, and youth who engage in frequent deviant behavior (Osgood, Johnston, O'Malley, & Bachman, 1988). The high degree of correlation that exists between violence and AOD activity also exists among a host of other co-occurring problems such as mental illness (Lorion & Saltzman, 1993; O'Keefe 1997), suicidality (Fehon, Grilo, & Lipschitz, 2001), and co-victimization (Feigelman, Howard, Li, & Cross, 2000; Kuther & Wallace, 2003; Duque, Klevens, & Ramirez, 2003).

A significant correlation also exists in the type of exposure within the drug and violence exposure groups. For example, youths who have been victimized are far more likely to also perpetrate violent crimes; likewise, perpetrators also are more likely to be victimized (Malik, Sorenson, & Anehensel, 1997; Dahlberg, 1998; Kuther, 1999; Fehon, Grilo, & Lipschitz, 2001; Duque, Klevens, & Ramirez, 2003). With respect to drug use, recent evidence suggests that given opportunities to use, there is little discrimination in who actually becomes a user. In this model it is the frequency of perceived opportunities that drives the drug use and less so some underlying propensity to engage in deviant behavior (Wagner and Anthony, 2002; Wilcox, Wagner, Anthony, 2002). In addition, youth who traffic drugs or perceive trafficking by neighbors, friends, and family are more likely to use drugs (Li and Feigelman, 1994). Mediators of this relationship included perceived social environments and economic need (Li and Feigelman, 1994).

In summary, there is an ever-present and, for African-American males, increasing trend in violence and AOD exposure, especially among urban adolescents. To better understand the context of the precursors, occurrences, and consequences of violence and AOD exposure, it is important to understand the local environments of youth because there is increasing evidence that substantiates the important role the environment plays in promoting and sustaining youth exposure (e.g., O'Keefe, 1997; Kunther & Wallace, 2003, Mair & Mair, 2003).

2. The Environmental Context of Youth Violence and AOD Exposure: Implications for Prevention

Although violence and AOD activity (e.g., use and selling) traditionally have been addressed within the criminal justice system, they have emerged as major public health issues. Although there is a growing body of evidence in public health that substantiates the environment as a determinant of disease and poorer outcomes in general, there has been little focus on the environment when considering violence and AOD prevention strategies. For several decades, criminologists, epidemiologist, psychologists, policy analysts, and others have been researching environmental factors in prevention. Much of this work has been guided by theoretical frameworks that aid in understanding the role of the environment in the occurrence of crime and incivility and, more specifically, youth violence and AOD exposure. Three major theories are discussed and will be used to develop the theoretical framework for the proposed investigation.

The first theory used to understand the linkage between violence and AOD exposure and environmental factors includes the family of incivilities theses or Disorder Theory. In short, these hypotheses applied to urban settings purport that physical disorder in urban neighborhoods can lead to serious crime and further disorder (e.g., Taylor, 1999; Mair & Mair, 2003). Hunter (1978) expanded the theory and further proposed that residents, when they are surrounded by disorderly conditions, presume that local officials cannot or will not intercede, thus the likelihood of becoming exposed to crime in their neighborhoods is greater. A specific example of Disorder Theory includes the Broken Window Theory (e.g., Cohen, Spear,

Scribner, Kissinger, Mason, & Wildgen, 2000; Kelling & Coles, 1996; Wilson & Kelling, 1982). The Broken Window Theory, popularized in part by the work of Wilson and Kelling (1982), suggests that broken windows left unattended signal disregard for neighborhood environment and in turn promotes further damage, more severe crime, and heightened fear of crime among community residents. Rather than focusing on individuals, Wilson and Kelling (1982) focused on individuals, groups of residents, offenders outside of the neighborhood, and declining neighborhood safety. Their work clarified a multistep process of how increasing incivilities unravel over time causing weakened resident control over neighborhood life and heightened local fear and crime. The family of Disorder Theories provides insight on how neighborhoods decay, promote fear of crime and disorder, and ultimately increase disorder.

The second set of theories fall under the umbrella of Opportunity Theory (Felson & Clark, 1998). Included in this family of theses are the routine activity approach (Cohen & Felson, 1979), crime pattern theory (Brantingham & Brantingham, 1993), and the rationale choice perspective (Clarke, 1997). The routine activity approach suggests that changes in the structure of everyday routine activities such as walking to work or leisure time activities can increase or decrease crime opportunities. Coupled with crime pattern theory, offenders encounter crime opportunities while engaged in everyday activities, and under the rational choice perspective, they then evaluate the crime opportunity and decide whether or not to seize it. A model prevention application of the opportunities theory includes the Crime Prevention through Environmental Design (CPTED) Program (Crowe & Zahm, 1994; Jeffery & Zahm, 1993). CPTED looks at immediate opportunities for crime and how they can be blocked. For example, an outdoor dining area for employees that provides a view of the parking lot, promotes natural surveillance (Mair & Mair, 2003). On the opposite side of situational crime prevention, are situational precipitators which are factors in the environment, including physical, that help to form a person's motivation to commit crime.

Finally, Social Cognitive Theory of Behavior explains that there is a dynamic interaction among an individual's thoughts, behaviors and actions, and social environment (e.g., Rudan, 2000; Neumark-Sztainer, 1999; Barth, Fetro, Leland, & Volkan, 1992). In our case, with the focus on individual behavior, this theory of behavior allows a framework for understanding patterns of both criminality and victimization (Kunther, 1999; Halliday-Boykins & Graham, 2001) in relation to adolescent drug use and treatment (Diamond et al., 2002). For example, if a person witnesses a violent fight in their neighborhood, they may perceive a greater risk of harm and the next day decide not to go out of the house. This scenario may have different outcomes for different genders (i.e., it may evoke fear in girls but not in boys). Regardless, the behavioral response to exposure (e.g., decreased resident presence in the neighborhood) has implications for individual development as well as how the environment is shaped and maintained. The key is that a social cognitive model allows heightened understanding of how the environment influences thoughts and behavior and vice versa.

3. Significance

This proposal aims to identify promising environmental violence and AOD prevention strategies by providing (a) a comprehensive epidemiologic assessment of adolescents and primary caregivers within selected communities, and (b) a systematic and objective contextual analysis of the environmental precipitators theorized to promote and sustain elevated levels of exposure. The proposed research will increase understanding of specific individual and environmental factors linked with increased exposure and will lay a foundation for future investigations to test the hypothesis that violence can be prevented and controlled through environmental modifications (Mair & Mair, 2003).

The exploration of individual and caregiver characteristics that may moderate the impact of environmental factors, as well as violence and AOD exposure in youth living in high-exposure neighborhoods, will also aid in building more comprehensive intervention programs. This merger of

traditional person-centered programs and environmental modifications to develop a model program for community-based interventions that are sensitive to the environment within urban, primarily African-American communities is an important step in curtailing the current problems and future public health implications of increased youth exposure and future pathology and morbidity as these youths transition into adulthood (Howard, 1996).

C. PRELIMINARY STUDIES

The proposed R01 on environmental indicators of community violence and AOD exposure calls upon a profile of complementary research approaches and associated expertise, with a range that encompasses epidemiology and prevention research, as well as evolving approaches to environmental crime and violence prevention. The proposed Principal Investigator, C. Debra Furr-Holden, has training in epidemiology and prevention research as well as advanced statistical analyses. She is a young investigator with experience both as project director and coordinator of research studies in public health mental health, and prevention. To augment her capabilities, Dr. Furr-Holden has assembled a team of seasoned investigators and scientific advisors whose collective experience include areas directly pertinent to the proposed research: alcohol prevention, systems perspective in prevention, youth violent behavior and drug dependence, research methodology, and environmental prevention strategies. The following sections describe the expertise of the Project Investigative Team and consultants (see biographical sketches for more detail).

Project Investigative Team

C. Debra Furr-Holden, Ph.D., proposed Principal Investigator, is an associate research scientist with PIRE. Dr. Furr-Holden's combination of training and experiences in epidemiology, biostatistics, and prevention sciences render her well-suited to the role of Principal Investigator in this investigation of violence and AOD exposure. She also has applied working knowledge of advanced statistical methods including growth modeling. Throughout the project, she will oversee the research plan and protection of data.

Dr. Furr-Holden's predoctoral training was in drug and alcohol dependence epidemiology under the direction of Dr. James Anthony. This was a jointly sponsored program at the Johns Hopkins University (JHU) Bloomberg School of Public Health between the Departments of Mental Hygiene, Biostatistics, and Epidemiology, as well as the Department of Psychiatry at the JHU School of Medicine. Her postdoctoral training at the JHU Prevention Research Center included one year in psychiatric epidemiology with Dr. William Eaton, Principal Investigator of the Epidemiologic Catchment Area Program, and one year in prevention sciences with Dr. Nicholas Ialongo. During her postdoctoral training, she served as an investigator on the NIDA-funded "Periodic Follow-up of Two Universal Preventive Intervention Trials" and has two publications from this work. Dr. Furr-Holden also has extensive experience in advanced statistical approaches and preliminary investigations of neighborhood environment.

Nicholas Ialongo, Ph.D., is an associate professor at Johns Hopkins University and an experienced substance abuse prevention researcher with expertise in child and adolescent psychological assessment. Dr. Ialongo is a child and family clinical psychologist with more than 15 years experience designing and implementing research-based interventions for urban children and families. He has published widely on mental health and prevention issues for at-risk children and families. As a member of the Scientific Advisory Board, Dr Ialongo will provide expertise regarding psychological assessments, analysis of the impact of violence, and the effects of AOD exposure on mental health outcomes.

Judith Pokorni, Ph.D., proposed Project Director, is a senior research scientist at PIRE. She has more than 30 years of research and project management experience with high-risk children and adolescents in school and community settings. Since 1990, she has participated in various research and intervention efforts directed at harm reduction for children living in multi-risk families. She has recently completed a study with Marques of 9-year-old children prenatally exposed to cocaine and initially recruited by PIRE as one of the original NIDA Perinatal 20 studies. She is presently conducting evaluation studies on the use of technology for learning-disabled students in low-income communities.

Robert B. Voas, Ph.D., is a Senior Research Scientist with PIRE and a member of PIRE's Board of Directors. Dr. Voas is an internationally recognized expert on alcohol and highway safety and has been involved in research for 30 years. His research includes community alcohol problem prevention and contextual drug and alcohol prevention in college settings, at the Texas and California borders, and more recently, in club settings, as well as studies of the differences between ethnic groups in their involvement in alcohol-related fatal crashes. He will provide insight on environmental measures and application of findings to environmental interventions.

Project Consultants

Amelia M. Arria, Ph.D., the Deputy Director of Research at the Center for Substance Abuse Research (CESAR), University of Maryland, College Park, is an expert in AOD research among children and adolescents and youth violent behavior. She has conducted several studies of youth violent behavior and weapon carrying in Baltimore, Maryland. In addition, she is a recent recipient of a NIDA-award investigating drug use in college settings. She will bring her experience in place-based prevention strategies to the investigative team.

Julie Mair, Ph.D., proposed Co-Principal Investigator, is an Assistant Scientist at Johns Hopkins Bloomberg School of Public Health. She is a specialist in violence prevention and control using environmental modifications and injury prevention. Her most recent work, "Violence Prevention and Control through Environmental Modifications," is included as Appendix A.

Ralph Taylor, Ph.D., a professor of sociology at Temple University, who conducted a 20-year study of Baltimore neighborhood. Dr. Taylor's brings to the team his extensive expertise in applying theories of crime and incivilities to the study of neighborhood disorder, decay, crime, and violence.

1. Pilot Studies

In preparation for the proposed investigation, two sets of preliminary estimates are presented. The first includes details and reliability ratings of the neighborhood assessment inventory that will be used to rate and classify neighborhoods. The second set of estimates is derived from the ongoing assessments of youth over a 10-year period. These youths were originally enrolled in a prevention program implemented in first grade in Baltimore City and are currently in the eleventh grade. These data collected over the years

will be used to clarify the association between the community-level indicators with the incidence and prevalence of violence and AOD exposure in a sample of urban adolescents.

a. *Neighborhood Environment Assessments Preliminary Studies*

During the summer of 2002, a team of 6 trained NIDA-funded interns, from the Johns Hopkins Drug Epidemiology Training Program headed by Dr. James Anthony, pilot tested a neighborhood environment rating procedure. Dr. Furr-Holden conducted initial training for these assessments and led phase one field pilot-testing of the instrument. The inventory was an enhanced version of the Neighborhood Environment Scale (NES, Elliot, Huizinga, & Ageton, 1985). The NES consists of 18 true-false items and is used to assess exposure to deviant behavior in the neighborhood, including violent crime, drug use and sale, racism, and prejudice. The NES is designed for community youth and residents but was revised to serve as an objective inventory to be completed by trained raters. Further enhancements to the NES included adding measures specific to Baltimore neighborhoods including the existence of and accessibility of the unit block to alleys. Additionally, specific items were added for environmental signs of community order, including evidence of landscaping, broken windows, vacant houses both sealed and unsealed (i.e., boarded up with plywood versus open for public access) and commercial businesses. Inter-rater reliability for the scale was not evaluated because the scale went through several iterations before a final version was adapted. The complete piloted scale included two primary domains: (1) people in the neighborhood and their activity (e.g., fighting, exercising, hanging out, children playing) and (2) physical environment (e.g., noise, trash in the streets, broken windows, evidence of drug use).

In the summer of 2003 additional field testing of the revised neighborhood environment inventory was conducted. Lead by Dr. Furr-Holden, a team of 6 trained interviewers conducted ratings of 37 unique unit blocks in Baltimore City. The resulting instrument, which was developed, field-tested and refined in 2002, is now termed The Neighborhood Inventory for Environmental Typology (NifETy). In summary, all of the surveyed 37 blocks were considered residential, i.e. at least 50% of the land usage was allocated as residential domiciles. The interview team was racially mixed and spanned in age from 20 to 38. Training took place over a two-week period with the last several days allocated for instructional field-training in non-selected blocks. Upon completion of field training, one additional day of office training was added to clarify response categories and coding. In addition, details were added to the NifETy to specify the nature of signage and billboards (e.g., alcohol or drug-related versus some other advertisement versus artistic murals or graffiti). While the number of blocks sampled was too few to detect statistically significant differences in environmental features, we were able to produce inter-rater reliability estimates and run Rasch analysis of response categories to determine whether the coding system was biased or skewed in one direction.

A team of two raters inventoried each block. These assessments were done independently without any discourse between raters. All raters rated each of the 37 blocks. Reliability coefficients for each of the three teams were 0.69, 0.77, and 0.82. PI Debra Furr-Holden, along with a consultant, monitored each team while they rated blocks to ensure that they were not sharing information. Teams rated different blocks in order to minimize their presence in the neighborhood. In addition, the supervisors drew detailed diagrams of each block to facilitate discussion during debriefing sessions both on-site and in the office.

Response categories did not show appreciable internal error or skewness based on Rasch analysis. However, initial ratings from the first 5 ratings by non-Baltimore residents of the physical layout of the block were 100 discordant with resident raters. Additional specification of a standard city block was added to the coding system used in training and discussed in debriefing.

b. *Preliminary Estimates of Neighborhood Perceptions, Violence, and AOD Exposure*

To gain insight on the level of violence and AOD exposure among Baltimore youth, ninth grade data from the Second Generation Baltimore Prevention Program (BPP) were analyzed. The sample includes 678

youth enrolled in the BPP from fall of the first grade through spring of ninth grade, of which 147 youth were excluded because of missing assessments. Based on these data, there are high reports of perceived lack of safety in area neighborhoods among more than half of the youth (57.4%). Also noteworthy is the high report of witnessing drug use and selling in the neighborhood (58%) and reports of other youth being “beat up” in the neighborhood (33.5%). With respect to other drug exposures outside or within the neighborhood, alcohol was the most prevalent drug both with (81%) and without parental permission (48.4%), but there were also very high rates of illicit drug use (39.7%). The prevalence of violence perpetration including bullying and initiating physical fights ranged from 6.0% to 7.2%, with 8.7% of youth reporting use of a weapon in the past year. Reports of exposure to violence were also high, ranging from 9.5% of youth witnessing a mugging in the past year to 39.0% witnessing someone getting beaten up. Also alarming was the rate of victimization, which ranged from 1.9% to 2.9%. The most prevalent mental health problem among youth reported for the past year was conduct disorder (13.6%), using the Diagnostic Interview Schedule Child version meeting criteria, which increased to 16.9% of youth meeting criteria over the life course. Injury data was available, but it was not possible to link the injury to victimization.

Table 1. BPP Ninth Grade Survey Results

CHARACTERISTICS	N (%)
Neighborhood environment, perceptions, and exposure	
Not plenty of safe places to spend time outdoors	295 (57.4)
Don't feel safe walking around during the day	190 (37.8)
Don't feel safe walking around at night	310 (58.4)
Every few weeks a kid gets beat up	178 (33.5)
Every few weeks an adult gets beat up	136 (25.6)
Have seen people using or selling drugs	308 (58.0)
See drunk people in the neighborhood	211 (39.7)
Most adults do not respect the law	286 (53.9)
People with most money are drug dealers	199 (37.5)
People often damage or steal property	185 (34.8)
Lifetime drug exposure	
Alcohol use	430 (81.0)
Alcohol use w/o parental permission	257 (48.4)
Alcohol offered to youth	416 (78.3)
Illicit drug use	211 (39.7)
Illicit drug offered to youth	335 (63.1)
Drug-using peer	531 (100)
Five or more peers engaged in deviant behaviors	531 (100)
Violence exposure in the past year	
Bullying	32 (6.0)
Initiated physical fight	38 (7.2)
Used a weapon	46 (8.7)
Persistent pattern of conduct problems	46 (8.7)
Witnessed mugging	50 (9.5)
Been mugged	15 (2.9)
Witnessed someone get beaten up	207 (39.0)
Been beaten up	15 (2.8)
Witnessed a killing	17 (3.2)
Witnessed shooting or stabbing	39 (7.4)
Been shot or stabbed	10 (1.9)

CHARACTERISTICS	N (%)
Mental health diagnoses	
Past year dysthymia	6 (1.1)
Past year conduct disorder	72 (13.6)
Lifetime conduct disorder	90 (16.9)
Key family characteristics	
Mother or father alone household	168 (31.6)
Single family household	436 (82.1)
Adopted or foster family	14 (2.6)

D. RESEARCH DESIGN AND METHODS

1. Theoretical Overview and Conceptual Model

This work is guided jointly by Disorder Theory, Opportunity Theory, and Social Cognitive Theory of Behavior, which were discussed in the Background section of this proposal. A summary of these theories and the intersection for building the conceptual model for the current investigation follows.

Disorder Theory purports that physical disorder in urban neighborhoods can lead to serious crime and further disorder (e.g., Taylor, 1999; Mair & Mair, 2003). Opportunity Theory views potential offenders as crime opportunists who merely seize crime opportunities during the course of routine daily activity (e.g., CPTED Model, Crowe, & Zahm, 1994). Social Cognitive Theory of Behavior reasons that there is a dynamic interaction between an individual's thoughts, behaviors and actions, and the social environment (e.g., Rudan, 2000). In the current investigation, these theories are fused to form the conceptual framework that guides this work. Namely, it is proposed that neighborhood disorder breeds opportunities for crime that, in the absence of disorder, either would not exist or would be minimal. Further, the disorder and the manifestation of crime opportunities (i.e., increased crime) prompt cognitive and behavioral responses from youth and caregivers within the community. These responses include increased parental monitoring, heightened fear of the neighborhood, and decreased presence by inhabitants in the physical environment of the neighborhood. Over time, further neighborhood decay, more crime, and increased cognitive and behavioral adjustment among residents may occur. Although this theoretical framework has not typically been used to explain transient patterns of the economically disadvantaged, it might account, in part, for why perceived lack of control over environment in poorer populations promotes increased transient behavior.

This proposal is grounded in these theories. As shown in Figure 1, Conceptual Model, there is a bidirectional relationship between individual characteristics and behavior and community violence and AOD exposure. It is reasoned that behavior (such as staying out late) or personal characteristics (such as being a male in late adolescence) can influence exposure. Likewise, having been exposed to violence in the neighborhood can influence behavior (such as remaining indoors more or not coming outside after dark) or personal characteristics (such as number of deviant peers in one's peer group). Each of the relationships proposed in the conceptual diagram follow this pattern and will be evaluated in this study. Details of the measures under study are included in Section D.5.

One important area that merits further discussion is the moderating influence of parental management on the relationship between physical neighborhood environment and community violence and AOD exposure. Although the primary emphasis is on the association between physical environment and exposure, there is strong evidence that peers and parents influence exposure (Chilcoat & Anthony, 1996;

Chilcoat, Dishion, & Anthony, 1995). Peer group influences have been included in the youth assessment and brief insight on parents' knowledge of their children's peer group, but parental management and family involvement is included in both youth and caregiver assessments.

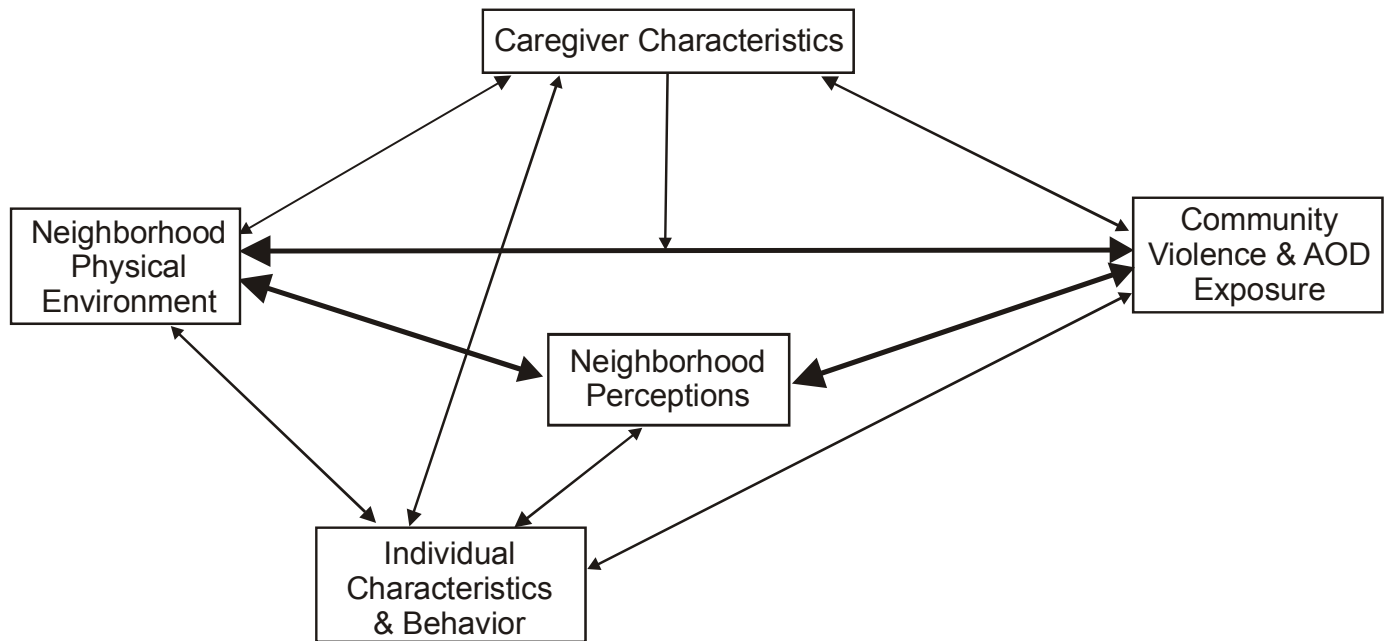


Figure 1. Conceptual Model

2. Assessment Overview

To achieve the first aim of the proposed investigation, a systematic epidemiologic approach will be used to study Baltimore's 277 ecologically-defined neighborhoods (Taylor, 2001). We will randomly select two blocks from each of the 277 Baltimore neighborhoods and evaluate the physical environment of each block. This first phase involves an objective assessment by trained interviewer teams (one male and one female per team) of the physical environment of the neighborhoods, operationalized as a unit block. Using a standardized neighborhood assessment inventory, characteristics including number of dwelling units, number of vacant units, number of broken windows, evidence of drug use or selling (e.g., needles or "blunts" contents), witnessing drug use or selling, level of noise and traffic, and number of commercial businesses will be evaluated.

To achieve the second aim of this investigation, we will use data from the Baltimore Prevention Program (BPP), a sample of high-risk, urban adolescents and their caregivers, to identify specific factors within communities associated with increased youth reports of community violence and AOD exposure.

3. Study 1: Neighborhood Environment Assessments

To address Specific Aim 1, independent and objective neighborhood ratings will be conducted on a random sample of two unit blocks within each of 277 ecologically defined neighborhoods of Baltimore City (Taylor, 2001). In keeping with the theoretical framework guiding the design of the inventory and choice of key variables under investigation we seek to (a) gather information on the physical environment of the neighborhood; (b) clarify the environmental contexts in which youth live and experience violence and AOD exposure; and (c) provide insight on environmental targets for future intervention efforts. Neighborhood environment assessments will be conducted using the recently revised Neighborhood Inventory for Environmental Typology (NifETy) included as Appendix B and described in more detail in Section C. Trained raters will travel as a pair to the selected unit block during both daytime (11 a.m. – 3 p.m.) and

nighttime (10 p.m. – 2 a.m.) hours. Each individual rater independently completes the neighborhood inventory. The primary domains of the assessment are based on a combination of theoretical frameworks discussed in the background including Disorder Theory and Opportunity Theory. As such the NifETy is comprised of items that represent the domains of the neighborhood which, according to these theories, foster the existence of crime and disorder, including physical disorder and decline and the nature and degree of nonresidential land use (conceptualized as crime or exposure opportunities; e.g., Taylor et al, 1995). Disorder and Opportunity Theory outlines multi-step processes describing (1) how increasing incivilities cause weakened resident control over neighborhood life along with heightened local fear and crime and (2) how routine neighborhood activities can increase or decrease crime opportunities. However, that level of inquiry is slightly beyond the scope of proposed work. Although our assessments are longitudinal over the course of two years and we plan to model the growth of neighborhood decline in our analysis, we focus on measuring the readily identifiable artifacts of these processes (Study 1) and relating them to the experiences of youth who reside in the setting (Study 2). Thus, we have captured the essence of the theories in our neighborhood measures. Additionally, the NifETy includes direct measures of evidence of violence (e.g., police markings or bullet fragments in the street) and AOD activity (e.g., liquor billboards, bottles, and used needles) as well as observations of youth and adults in the neighborhood (e.g., number of people, type of activity engaged in, open swearing). The domains of the NifETy are outlined and discussed further in the measures section (D5).

a. Selection of Neighborhoods for NifETy Ratings and Weighting Procedures

The first stage of sampling for the neighborhood selection involves stratification of Baltimore neighborhoods according to the 277 ecologically defined neighborhoods identified by Taylor (2001) in his 20-year study of Baltimore neighborhoods. Geospatial mapping of these regions will facilitate the next stage of sampling, namely random selection of 2 unit blocks within each of the 277 regions. A city map will be laid out and a grid placed over that map that defines the 277 neighborhoods. A second grid will be used to pinpoint a location within the defined region and a unit block will be determined for the location on the grid. This is very similar to the approach used in similar investigations (e.g., Taylor, Brower, & Drain, 1979).

The weight for each individual block will vary slightly as a function of the number of blocks within each of regions. This is important because to weight estimates back to the region, it is imperative to retain a probability of selection for each block. This is conveyed as the inverse of the probability of selection at each of the two sampling stages. For stage 1 sampling each region has a $1/277$ probability of selection (which is not critical since each region will be selected). However, at the next stage of sampling (i.e. the selection of unit blocks within the region to rate), the probability of selection is 2 (the total number of eligible blocks in the area). A block is deemed eligible if there are any residential dwellings on the block, regardless of habitation. Some blocks will have higher weights because they will, in essence, represent more blocks within the area. An alternative approach is to take a sample of blocks based on the number of blocks in the area. This approach was not preferred because the less urban and lower risk neighborhoods tend to be the larger, more loosely defined regions. This would lead to excess rating of more suburban areas, which are not the intended target of the research. Therefore, a random selection of 2 blocks per neighborhood will adequately capture the nuances of the region and allow for inter-regional and cross-regional variation in environmental characteristics.

b. Training of Staff

Training for the neighborhood assessments will occur at the PIRE office site and will use a standardized training protocol that includes explanations of each of the items being assessed, coding information, and instruction on how to code qualitative information. Training then moves to non-selected neighborhood blocks where the instrument is piloted and raters ask questions of the trainer as they complete the inventory. Field training and piloting will occur for five continuous half-days. Field training will be lead by the Principal Investigator, Dr. Furr-Holden, and Senior Project Manager. After field training, project staff will reconvene at the PIRE office site to debrief and review concerns. Once the debriefing is completed, raters will continue to

conduct the inventory in non-selected unit blocks under the direction of either the Principal Investigator and the Project Manager for two weeks at a rate of two separate blocks per day, assessed once during the day and once in the evening, for a total of four daily assessments per block. Only the activity and social disorder domains (see Table 4) are completed in the evening assessment. Inter-rater reliability coefficients will be calculated for the 2-week post-training assessments for the eight raters. Training is complete once the inter-rater reliability reaches .7. Periodic reliability checks will be made once the interviewers begin collecting data in the target neighborhoods.

4. Study 2: Linking Community-level Indicators and Patterns of Violence

a. Overview of the BPP

In 1993, a total of 678 children and their families, representative of the entering first graders in nine Baltimore City public elementary schools, were recruited into the second generation BPP trial sample. Fifty-three percent of the sample was male, 86.8% were African-American, and 13.2% were of Euro-American heritage. At entrance into first grade, the children ranged in age from 5.3 years to 7.7 years with a mean age of 6.2 years (SD + 0.34). Nearly two-thirds (62.3%) of the children received free or reduced lunch, a proxy for family income. Of the 678 children available for participation in the fall of first grade assessments, written parental consent was obtained for 97% of the children. Three percent of the parents or guardians refused to allow their children to participate in the assessments or failed to respond to the consent request. Chi-square analyses and t-tests failed to reveal any significant differences in socio-demographic characteristics (ethnicity, age, gender, and free lunch status) between the group with parental consent and the group without consent.

A randomized block design was employed, with schools serving as the blocking factor. Three first grade classrooms in each of the nine urban elementary schools were randomly assigned to one of three conditions: two intervention conditions or a control condition (the standard classroom setting). Teachers and children were randomly assigned to intervention conditions with balancing for gender. Following a pretest assessment in the early fall, the interventions were provided throughout the first grade. More detail on the content of the interventions employed in the BPP is available in Furr-Holden et al., 2004, included in Appendix A.

At follow-up, 5, 6, and 7 years after randomization (6th – 8th grades), approximately 84% (566/678) of the sample was available and was re-assessed in early adolescence (mean age 13 years). Attrition across these years was unrelated to intervention status and participants who were lost to follow-up did not differ from participants with complete data with respect to baseline teacher ratings, academic achievement, ethnicity, sex, or free lunch status (i.e., no $p < 0.05$). Five to nine years after randomization, when the children were in the 6th through 10th grades, 566 of the children (approximately 83.5% of the sample) were assessed. Attrition in this population was unrelated to intervention status and participants who were lost to follow-up did not differ from participants continuing in the study with respect to baseline teacher ratings, academic achievement, ethnicity, gender, or free lunch status.

Of the 566 participants followed to date, 316 reside in Baltimore City. These 316 youths and the blocks they live on are the targets for the present investigation. Intervention status will be treated as a covariate in analyses of these youth, although there are no specified mechanisms by which the interventions were thought to influence violence.

b. Protocol for NifETy Ratings of BPP Participants and Data Sharing

The Data Manager for the JHU subcontract will provide PIRE investigators with a file that contains a unit-block identifier and the JHU internal identification number (ID) for each Baltimore City resident included in the upcoming BPP 11th grade assessment which begins in spring 2005. Upon completion of a BPP child interview (often the parent and child interviews happen at different times and, in some cases, the parent interview is not completed but a child interview is completed), the Data Manager will add the unit block to a separate data file that contains only the participant unit block and internal ID. This file will be updated

weekly and sent weekly to PIRE staff. At PIRE, the Project Manager will then assign the block to an interview team for rating. The spring/summer ratings of BPP participant blocks will run concurrent with Summer ratings from Study 1, and will represent unique blocks. It is possible that there may be minor overlap in that a randomly selected block from Study 1 might be the same as the unit block of a BPP participant. Since these analyses are separate, this does not present a problem. Once the annual BPP data collection is complete (typically by the end of the school year in late June) and the data are cleaned (typically by August), the JHU data manager will provide PIRE investigators with a final and complete data set that contains assessment data and internal ID so we can link neighborhood ratings with assessments. In year one of the project, the JHU Data Manager will provide PIRE investigators with historical assessment data for BPP participants to allow adjustment for historical exposure and other key variables of interest (see Section D5). All PIRE investigators will sign a data user agreement with JHU.

5. Measures

Key measures for this investigation will focus on (a) estimating the incidence, prevalence, antecedents and consequences of community violence and AOD exposure (Specific Aim 1) and (b) youth and caregivers perceptions and exposure to violence and AOD activity, as well as caregivers knowledge of their dependent's exposure (Specific Aim 2). The central concern will be the objective neighborhood ratings and their association with reports of violence and AOD exposure (Specific Aim 2). Table 2 lists the youth variables and corresponding measures. Note that the BPP data contain self-reported youth and caregiver ratings from the Neighborhood Environment Scale (NES). These measures will be used in subsidiary analyses to compare NifETy ratings with self perceptions of neighborhood environment.

Table 3 illustrates the parent variables and measures Table 4 outlines the objective measures. More extensive information on BPP measures is included in Appendix C. Also included in Table 4 is the full inventory for the objective environmental inventory. The inventory codebook will be developed to provide further detail on the coding and quantification of variables. The instrument, Neighborhood Inventory for Environmental Typology (NifETy) is included in Appendix B.

Table 2. Youth Survey Measures

VARIABLE	MEASURES, ANTECEDENTS, MEDIATORS, AND CONSEQUENCES
Key Exposure and Outcome Measures	
Exposure to violence & AOD in and out of the community	Violence assessments include: Type of violence exposure (e.g., witnessing, victimization, or perpetration), residency of perpetrators, age at exposure, frequency of exposure, fear of future exposure National Household Survey on Drug Abuse (NHSDA, SAMHSA, 2000). Reports of lifetime, last year and last month substance use via the use of selected subscales from the NHSDA, as well as opportunities to use and age of use and opportunity.
Neighborhood/community perceptions (e.g., neighborhood violence, substance use, poverty, crime)	Neighborhood Environment Scale (NES, Elliot, Huizinga, & Ageton, 1985). The NES consists of 18 true-false items and was used to assess exposure to deviant behavior in the neighborhood, including violent crime, drug use and sale, racism, and prejudice. Crum and Anthony (1993) reported Baltimore youths living in neighborhoods in the highest tertile of crime and drug use, as measured on the NES, were 3.8 times more likely to have been offered cocaine than youths in the lowest tertile, $\alpha=0.80$.
Hypothesized Antecedents and Mediators of Exposure	
Demographics	Self-report (e.g., age, sex, race, grade in school)
Familial management	Structured Interview of Parent Management Skills and Practices—Youth Version (SIPMSP, Capaldi & Patterson, 1989; e.g., parent discipline, monitoring, reinforcement, interaction; number and quality of caregivers).
Exposure to deviant peers	Patterson and colleagues (Capaldi & Patterson, 1989; Patterson et al., 1992) have theorized that drift into a deviant peer group increases the risk for antisocial behavior. They argue that antisocial behavior and substance use is not only modeled, but reinforced, by the deviant peers. Accordingly, using a scale developed by Capaldi & Patterson, youths

VARIABLE	MEASURES, ANTECEDENTS, MEDIATORS, AND CONSEQUENCES
	will be asked how often their peers have engaged in antisocial behavior and/or violence or substance use. Coefficient alphas ranged from .78 to .81 in previous investigations of middle school youth.
Consequences	
Psychological well being (anxious & depressive symptoms)	The Baltimore How I Feel (BHIF) is a 30-item, youth self-report scale of depressive and anxious symptoms. Children report the frequency of depressive and anxious symptoms over the last 2 weeks on a three-point scale; DISC IV-Y's Dysthymia/Major Depression/Anxiety modules).
Injury	Self-reported injury following exposure. Youth will be asked about any injuries sustained as a result of community violence or AOD exposure including hospital visits.
Behavioral changes	Reported behavioral changes following community exposure.

Table 3. Caregiver Measures

VARIABLE	MEASURE
Household Structure & Demographics	A number of family socio-demographic characteristics will be obtained for each of the members of the household: length of residence, level of education, occupational status, marital status, ethnicity, employment status, age, and relationship to target youth. We will also obtain total family income, the child's country of origin, the biological father's and mother's involvement in the child's caregiving, and the number of moves the family has made since the child was born.
Neighborhood/community perceptions	Neighborhood Environment Scale (NES, Elliot, Huizinga, & Ageton, 1985). See Table 2 for more detail.
Parenting practices	Structured Interview of Parent Management Skills and Practices—Parent Version (SIPMSP, Capaldi & Patterson, 1989). The SIPMSP is designed to assess the major constructs included in Patterson et al.'s (1992) model of the development of antisocial behavior and substance use in children. As in the youth version, the items assess (1) parental monitoring, (2) discipline, (3) reinforcement, (4) rejection, and (5) problem solving.
Other caregiver information	We will use a previously constructed scale from the BPP to identify which of the adults in and outside of the household share in child caregiving for the target child and what roles they play.

The NIfETy is based on the theoretical domains of neighborhood disorder that perpetuate violence and criminal activity. Grounded in theories of social disorder and routine activities the instrument has domains that are designed to quantify the extent of activity and disorder in the neighborhood. Disorder has been conceptualized by the investigative team as both a physical and a social construct. For example, the extent of broken windows on a block signals a heightened degree of neighborhood disorder (e.g., Taylor, 2001). We have expanded this model and will test if, for example, the number of people openly swearing on a street is a similar signal. Our theoretical model further purports that opportunities for exposure (or crime) are a necessary and sufficient condition for exposure. We have therefore included in the NIfETy domains items documenting the actual physical layout of the block and the degree to which the block is inhabited since the physical layout and degree of residency can both increase and decrease opportunities for crime and youth exposure to violence and AOD activity. Lastly, after pilot-testing and qualitative field observations of several neighborhoods, we have developed direct observation measures of violence and AOD indicators. The seven domains of the NIfETy are (1) Physical layout, (2) Type of dwellings (e.g., residential or commercial), (3) Adult activity, (4) Child activity, (5) Physical order and disorder; (6) Social order and disorder; and (7) Violence and AOD indicators. Table 4 provides outlines each domain and the items within each domain. The NIfETy instrument is included in Appendix B.

Table 4. Objective Measures

VARIABLE	SOURCE
Crime in the neighborhood	Baltimore City Police Department records will be obtained to determine the frequency and nature of police contacts and criminal convictions for adults in the neighborhood and level of reported crime
Neighborhood Environment Inventory	<p>Using an enhanced version of the adapted NES, independent neighborhood ratings are completed by trained raters. The domains and items of the revised scale include:</p> <p>a. Physical layout of the block</p> <ul style="list-style-type: none"> • Length (corner to corner) • Width (curb to curb) • Alley present (#) • Number of dwellings • Type of dwellings (e.g., rowhouses, apartments) • Commercial property (#) • Churches (#) • Other non-residential structures (type and #) • Residential/non-residential proportion <p>b. Activity</p> <ul style="list-style-type: none"> • # of adults outside • Adult activity (e.g., sitting on steps, watching children, exercising, hanging out) • # children outside • Child activity (e.g., playing, sitting with friends, in transit) • # of passers by in 3 minutes • # of people in work uniforms • Positive human interaction (e.g., people laughing or playing cards) <p>c. Physical disorder and order</p> <ul style="list-style-type: none"> • Broken windows (#) • Abandoned houses (#) • Boarded abandoned homes (#) • Unboarded abandoned homes (#) • Unmaintained property (e.g., peeling paint, falling down steps) • Trash in street and amount Trash in alley and amount • Trash in other open spaces and amount <p>d. Social disorder and order</p> <ul style="list-style-type: none"> • Vacant lots (size and trash present) • Broken bottles • Potholes (#) • Graffiti • Damaged sidewalks • Warning signs (e.g., no loitering) • Bus stop present on street • Murals • Billboards (content) • Security alarm signs on houses (#) • Evidence of vandalism (e.g., bent or missing street signs, damaged pay phones) • Evidence of landscaping (type/amount) • Motor vehicles on block (#) • Abandoned vehicles on block (#) • Noisy • Homeless people • People yelling (inside houses and outside) • People swearing (inside houses and outside) • People in physical fights • People loitering • Intoxicated people in the street <p>e. Violence and AOD Indicators</p> <ul style="list-style-type: none"> • Drug paraphernalia (e.g., syringes, vials, small baggies, insides from 'blunts') • Type and amount of drug paraphernalia • People smoking tobacco • People consuming alcohol • People using drugs • Obvious signs of drug selling (e.g., observe money and vials or baggies exchanged) • Blood in street or sidewalks • Shell casings in street • Police outlines in street • Memorials on block (e.g., Picture and teddy bears at a sign post)

6. Sample Size and Power Calculations

There are two studies proposed in this investigation and power considerations are unique to each study and therefore presented separately.

Study 1 is a comparison of environmental characteristics within and across neighborhoods. The analyses proposed include (1) prevalence estimation of environmental features and (2) confirmatory factor analysis

to determine the extent to which the items reflect the theoretical domains of the NifETy. We will examine inter-class correlations among factors to estimate the degree to which factors are redundant. While theoretically we have outlined 7 distinct different domains, the data may yield a more parsimonious solution. With a total of 554 unit blocks or approximately 8 blocks per item in the 68-item scale, there is sufficient power to identify 7 discrete domains if they exist empirically.

In Study 1, we have also opted to model the growth of changes in neighborhoods over the two-year, four-point assessment period. The complexity of power calculations for growth modeling is rooted in several key issues. Primarily, without proper insight on the number, size, and shape of underlying latent classes, it is difficult to make predictions on parameter values. Answering research questions related to change processes over time requires some evidence to make stable assumptions about underlying distributions within a given population. Lacking the information on variations in underlying distributions increases the burden of calculating power for these distributions.

Notwithstanding these limitations, there are procedures to calculate power for studies of the type proposed here. Monte Carlo studies are one approach to estimating power for growth models. In Monte Carlo studies, data are generated from a population with hypothesized parameter values. A large number of samples are drawn, and a model is estimated for each sample. Parameter values and standard errors are averaged over the samples. The following criteria will be examined: parameter estimate bias, standard error bias, and coverage.

To conduct a Monte Carlo study for the growth models proposed in this investigation, we minimally need to have these components as well as some insight of the number, size, and shape of underlying latent classes since the focus of the power investigation in the growth model is the regression coefficient in the regression of the slope growth factor on the covariate (Muthén & Muthén, 2002). The following results for power relative to sample size using a Monte Carlo simulation is provided for a growth model with one degree of freedom by Muthén and Muthén (2002).

Table 5. Power Calculation Using Monte Carlo Procedure

SAMPLE SIZE	POWER
44	0.80
50	0.85
100	0.98
200	0.99

These are the sample sizes per class. For a minimum of 80% power we need at least 44 unit blocks per class. Given the total block sample of 554 we will have sufficient power to detect patterns of environmental change in neighborhoods over time and expect no more than 5 possible classes including: stable low class, moderate and high disorder classes, an increasing disorder class, and a decreasing disorder class.

Study 2 is designed to determine the association between reports of violence and AOD exposure with neighborhood environmental characteristics. With an anticipated sample size of 316 subjects, there is sufficient power to detect differences in the prevalence and risk for exposure to violence and AOD activity using environmental indicators and other socio-demographic and personal characteristics. For example, based on preliminary studies, it is expected that at least 30% of the 316 youth will report witnessing the beating of a child in their neighborhood (see Table 1). If the prevalence was lower, for example, 15% in highly ordered neighborhoods, the estimated sample size to detect significant differences between the two groups would be 268. The table below summarizes sample size needed per group for comparing proportions between 2 groups with the conditions that type 1 error $\alpha=0.05$ and type II error $\beta=0.02$.

Table 6. Estimated Sample Size Needed to Detect Significant Differences between the 2 Groups

	5%	15%	30%	45%
5%	—	160	43	22
15%	160	—	134	42
30%	43	134	—	176
45%	22	42	176	—

Based on these calculations, there are more than sufficient cases to detect significant differences in exposure based on environmental characteristics with dichotomous exposure measures.

7. Data Analysis

a. Study 1: Identifying community-level indicators of violence and AOD activity

(1) Estimating the Prevalence of AOD Indicators

Prevalence estimates of AOD indicators will be derived from weighted estimates among sampled blocks. Weights are calculated as the product of the inverse probability of selection. Estimates are calculated in one regression model and can include covariates for suspected determinants or other measured variables which might influence the prevalence of selected indicators. The constant for this model represents the prevalence of an indicator in the sample. This approach to prevalence estimation will allow adjustment of these indicator estimates by other indicators, as well as the total scale score by specific indicators. These estimates will be produced separately for day/night and seasonal ratings.

(2) Establishing Inter-Rater Reliability of the NIfETy

In order for the NIfETy to serve as a valid marker for violence and AOD exposure it should be replicable across raters. Without good inter-rater reliability, validity is minimized. Hence, multiple administration of the test will aid in establishing the inter-rater reliability, based on the kappa-statistic that measures the percentage agreement beyond what would be expected by chance alone. Kappa is considered an appropriate measure of agreement when the periods covered by both assessments are similar (Magura & Kang, 1996). Kappa scores range from 1 (indicating perfect agreement) to -1 (indicating total disagreement). Kappa's scores of zero indicate no agreement beyond what would be expected by chance alone. We rely on Fleiss' (1981) index of agreement to gauge the goodness of our test-retest reliability, namely Kappa's of 0.74 and higher indicate excellent agreement, Kappa's from 0.65-0.75 indicate good agreement, Kappa's from 0.40 to 0.64 indicate fair agreement, and Kappa's lower than 0.39 indicate poor agreement. We will also estimate the intra-class correlation coefficient (ICC) between raters. This is similar to the procedure used in other published reports (e.g., Ogonowski et al., 2004; Grant et al. 2003).

(3) Factor Analysis

Before assessing which environmental indicators are linked with increased exposure to violence and AOD exposure, it is important to first understand the structure and metric properties of the neighborhood inventory. To gain this clarity, a factor analysis will be employed. Using M-Plus Software (Muthen & Muthen, 2000), it is possible to conduct a factor analysis using mixed categorical and continuous variables, a feature not available in most statistical programs. This analysis will aid in understanding if there are specific dimensional aspects of neighborhoods. For example, we may detect a "desolate" dimension for neighborhoods, which might be high on broken windows, high on commercial property, low on occupied dwellings, and low on activity. Confirmatory factors analysis will be used to test the extent to which the items reflect the theoretical domains of the NIfETy. We will examine inter-class correlations among factors to estimate the degree to which factors are redundant.

These analyses will be used to test Hypothesis 1 (There are discrete domains of neighborhood disorder and decay) and Hypothesis 2 (The domains and degree of neighborhood disorder are quantifiable). Our theoretical constructs guide the confirmatory factor analyses, while exploratory factor analysis allows us to identify discrete domains of the environment outside the scope of what we have conceptualized.

(4) Growth Modeling for Time-Varying Effects

To address Hypothesis 3 (There is seasonal and time-of-day variation in the degree of detectable neighborhood disorder and activity), we will examine correlations between day- and night-time ratings of activity and use growth modeling to examine seasonal effects and changes in neighborhood environment over time. The correlation analysis is a simple pairwise analysis of scale items at T1 (daytime) and T2 (nighttime). Growth modeling will be used to examine how neighborhood features and scale scores vary at distinct time points as well as throughout the study period. A summary of growth modeling and the application to this study follows.

Generalized growth mixture modeling (GGMM) (Muthen & Muthen, 2000) is consistent with a person-centered approach to data analysis that emphasizes individual differences in development (Magnusson, 1998). Using the Mplus Version 2.13 statistical software package (Muthen & Muthen, 1998), we will identify distinct patterns of growth or changes in neighborhood environment over time. Like traditional growth modeling techniques, GGMM estimates latent variables based on multiple indicators. The multiple indicators of latent growth parameters correspond to repeated univariate outcomes at various time points, in this case environmental indicators. However, rather than assuming that the population is constructed of one continuous distribution, GGMM tests whether the population is constructed of two or more discrete sub-classes, with the ultimate goal of determining optimal class membership for each individual or in this case neighborhood (or unit block). Evidence for these different pathways in neighborhood disorder exists when models involving two or more latent classes of growth provide a better model fit than a traditional one-class growth model. GGMM is similar to the Semi-Parametric Group-Based (SPGB) modeling approach described by Nagin (1999) in that classes define different trends over time using repeated measures (Muthen, 2000). However, unlike SPGB, GGMM allows for the modeling of class specific levels of variation. For models in which all parameters are the same, GGMM and SPGM provide identical results. GGMM is selected in the current study to allow for the possibility of heterogeneity within classes since it is reasonable to assume that neighborhoods within a given class might not have identical patterns of educational development. Allowing for heterogeneity also tends to improve overall model fit and classification accuracy (Muthen, 2000). The observed time variant indicators for the year one analysis consist of NIFETy total scale scores as well as theoretical and empirical sub-scale scores. Since growth modeling requires at least four time points, and as such these analyses will occur after the completion of data collection at the end of Year Two. These analyses will be conducted separately for day- and night-time ratings.

b. Study 2: Assessing the relationship between violence and AOD exposure and neighborhood environment

(1) Demographic Characteristics and Variance Estimation

The expected correlations between potential residents of the same “cluster” or neighborhood necessitates use of standard survey procedures to account for clustering of respondents within unit blocks. These procedures involve the use of Taylor series linearization methods for variance estimation, which will be implemented in STATA software (STATA Corp, 2001). When comparing personal characteristics, it is presumed that individuals on the same block are more alike than individuals from different blocks with respect to community exposure and demographic characteristics. Therefore, for individual comparisons, it is most appropriate to use the cluster variable that includes the unit block and household.

(2) Suspected Determinants and Consequences of Violence and AOD Exposure

Regression models will be used to estimate the magnitude of association between socio-demographic characteristics and exposure to violence and AOD activity. These models will include a covariate for intervention status to hold constant any potential benefit from participation that might confound observed relationships. Collaborators at JHU will lead any analyses of intervention effects should it be the case that intervention had a significant impact on community violence and AOD exposure.

There is a range of violence and AOD exposures under investigation. Reported victimization could include: being bullied by neighborhood peers, physical assault, or assault with a weapon. Reported exposure to violence could include perpetrating violence against others or witnessing a fist fight while sitting outside on the porch. Similarly, drug exposures can range from being offered an opportunity to use drugs, using drugs, or selling drugs. Initial analyses will look at each of these exposures and estimate the independent association between socio-demographic variables and each sub-classification of exposure. First stage analyses will use logistic regression to examine whether or not a variable increases the likelihood of simply having the exposure, e.g., being male and witnessing neighborhood fights in the last year. Second-stage models will include statistical adjustment for other covariates (e.g., age and enrollment in school. Unadjusted and adjusted odds ratios will be used to convey the strength of association). The socio-demographic variables considered for inclusion in fully adjusted models are the demographic variables outlined in Tables 2 and 3 and include age, sex, race, school enrollment, family income, length of residences in neighborhood, and other factors. Confounding variables will be identified by appreciable changes in the odds ratio estimates when additional terms are included in unadjusted or semi-adjusted models. To test for subgroup variation in effects, two- and three-way tests for interactions will be performed. Logistic regression model goodness-of-fit statistics with $\alpha=0.10$ will be used to assess whether product terms should be added to these models. By convention, relaxing the α -level for interaction terms better facilitates detection of subgroup differences (Furr, Delva, & Anthony, 2000).

Suspected determinants of violence and AOD exposure among youth are listed in Tables 2 and 3 and include demographics, neighborhood perceptions (e.g., feeling unsafe), family dynamics (e.g., parent monitoring), social adaptation, peer pressure, and exposure to deviant peers. Suspected consequences under investigation include diminished psychological well-being, injury and avoidant behavior (e.g., not spending time outside). Again, logistic regression models will be used to test the strength of association between suspected determinants and consequences and sub-types of exposure. These analyses are important background statistics to achieve Specific Aim 1.

(3) Identifying Neighborhood Indicators Linked with Increased Exposure to Violence and AOD

There are several items to be explored in these analyses. To begin, a dichotomous youth violence and AOD exposure variable will be used. This dichotomous variable will be regressed on each item from the inventory in a logistic regression model. This will reveal the independent effect of each item on youth reports of exposure. This is the goal of Specific Aim 2. Extension of these models will include statistical adjustment for demographic characteristics and tests for sub-group variation similar to those proposed in the analysis of suspected determinants.

To add more detail to these estimates and better understand the relationship between neighborhood environment and exposure, several additional analyses are proposed. First, using the factors identified in the metric assessment of the neighborhood inventory, it is possible to now look at how distinct dimensions of neighborhood environment predict youth exposure. In addition, we will examine subtypes of violence and AOD exposure and estimate which neighborhood items and dimensions are associated with subtypes of exposure. For example, neighborhoods identified as “desolate” from the factor analysis may be more likely to have higher rates of drug selling or perceived lack of safety.

These analyses are central to Hypothesis 1: There is a direct relationship between neighborhood physical environment and youth reports of community violence and AOD exposure. We hypothesize that neighborhoods with high disorder and violence and AOD indicators will have increased youth reports of exposure.

To address Hypothesis 2 (The relationship between neighborhood environment and youth community violence and AOD exposure will be mediated by caregiver characteristics including parental management and parental perception of the neighborhood) and Hypothesis 3 (The relationship between neighborhood environment and youth community violence and AOD exposure will be mediated by youth characteristics including affiliation with deviant peers, non-community violence and AOD exposure, and youth perception of the neighborhood) we will use mediation analyses and extend our regression models. To qualify as a mediator, caregiver and youth characteristics must independently be associated with the outcome and at least theoretically be downstream from the predictor variable, i.e. neighborhood environmental characteristics. While it is possible that the parents influenced the neighborhood and they, to some degree, chose the neighborhoods their dependents live in, we have conceptualized that the effects of the neighborhood can be buffered by parental management and by youth characteristics. Therefore, we chose to model that relationship. These models will also include tests for sub-group variation by gender since (1) it is possible that these effects will vary for boys and girls and (2) there is strong evidence that parental management varies by gender (e.g., Ramirez et al., 2004; Kim, Hetherington, & Reiss, 1999; Chilcoat, DiShion, & Anthony, 1995).

(4) Subsidiary Analyses

The proposed data resulting from this project can be used for a wide range of analyses. The current proposal includes a Principal Investigator, a Project Analyst, and a research assistant, as well as a Senior Project Manager. The analytic staffing efforts are increased in later years to facilitate efforts on mining the resulting rich dataset that holds potential for longitudinal follow-up. Proposed secondary analyses include examining: (1) the correlation between youth and caregiver reports of violence; (2) correlation between NifETy ratings and self-reported NES ratings for youth and caregivers (3) personal and neighborhood risk profiles of adolescent offenders; (4) characteristics of victims of community violence; and (5) environmental factors associated with increased transition from opportunities to use drugs to actual drug use. These are a few of the analyses possible with the data available through this investigation.

8. Threats to Validity

There are a few factors that need to be discussed which could hinder the proposed effort. One concern for the validity of this study is the reliance upon self-report measures for activity that might be incriminating (e.g., perpetrating a violent act). Respondents might also be more reluctant to provide truthful information about criminal, inappropriate, or socially deviant behavior that could potentially implicate them or someone close to them. The BPP interviewers receive intensive training in building rapport with participants and all sensitive portions are self-administered, which tends to increase truthful reporting. Study 2 and the reliance upon BPP data is essential to this study in affirming the utility of the NifETy as an environmental screen for excess violence and AOD exposure among youth. The BPP investigative team has taken several steps to ensure accuracy of responses and periodic validity checks of the data are conducted to ensure that responses are consistent across time (e.g., reports of age of onset of first drug exposure). Another potential bias relates to the specification of models relating environmental factors to person-level exposure. There is a universe of potential pathways by which community influences individuals and vice versa. What are laid out in this investigation are a few distinct pathways that theoretically will explain a large amount of observed variance in reports of exposure. Extension of this work in future efforts will include more expansive modeling and psychosocial variables that include other domains of potential importance, such as the school environment or academic performance. As outlined, however this research will advance existing knowledge in the area of environmental health and youth exposure and aid in building future targeted intervention programs.

9. Dissemination

The research plan includes activities in the following areas: poster and oral presentations at scientific conference, and manuscript submissions to peer-reviewed journals. Conferences planned for dissemination include the College on Problems of Drug Dependence (CPDD), the Society for Prevention Research (SPR), and the American Public Health Association (APHA). Publication of the results, both interim and final, in appropriate peer-review journals is also planned. Proposed publications include:

- Violence and AOD exposure in a sample of high risk adolescents
- Environmental factors associated with increased exposure to community violence and AOD activity
- Metric properties of the Neighborhood Inventory for Environmental Typology (NifETy)
- Modeling changes in environmental characteristics and impact on adolescent violence and AOD exposure

10. Timeline

The brief outline below shows the approximate sequence of activity assuming an award is made for an April 1 start date.

Table 7. Revised Timeline

	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	
YR1	Hire RA & Data Teams	STUDY I											
		Train data teams	Conduct summer-1 NifETy							Conduct winter-1 NifETy			
		Establish block sample (n=554)				Manage and analyze data							
		STUDY II											
		Train data teams	Conduct BPP summer-1 NifETy										
		Identify BPP block sample (n=316)				Manage and analyze data							
		Present preliminary NifETy data at conferences: APHA											
YR2	STUDY I												
	Update Training		Conduct summer-2 NifETy						Conduct winter-2 NifETy				
	STUDY II												
	Update Training		Conduct BPP summer-2 NifETy										
	Manage and analyze data (ongoing)												
	Prepare manuscripts (ongoing)												
YR3	Disseminate findings at conferences: CPDD & SPR (June) APHA (Sept.)												
	Manage and analyze data (ongoing)												
	Prepare manuscripts (ongoing)												
Disseminate findings at conferences: CPDD & SPR (June) APHA (Sept.)													

E. HUMAN SUBJECTS

1. Human Subjects Involvement and Characteristics

There is minimal risk of adverse events from participation in the proposed study. Study 1, an environmental assessment of neighborhoods in Baltimore City, does not involve human subjects and is therefore outside of the scope of human subjects regulations. Study 2 uses data collected as a part of the Baltimore Prevention Program at the Johns Hopkins University Bloomberg School of Public Health. The protocol for protection of human subjects for this NIDA funded project (R01-DA0011796) is approved through September 2004 by The Johns Hopkins University Bloomberg School of Public Health Committee on Human Research. The Committee has given its approval to cover the measures, design and procedures to collect and analyze the BPP data (CHR # H33.02.06.07.A). Review for upcoming data collection is scheduled for July 2004 and will cover a one-year period following approval. This approval is updated annually. The human subjects protocol and safeguards for the BPP are detailed in Appendix C. As outlined, study is a secondary data analysis and includes no data collection by PIRE, and a description of relevant human subjects issues follows.

a. BPP Population

The BPP data, collected during the second generation BPP intervention trial, are held by the JHU Prevention Intervention Research Center (PIRC), subcontractor on the proposed project. Data collection by JHU PIRC will continue during the length of this proposed project, through prior funding received by NIDA. Data collection has been approved by the JHU IRB. JHU PIRC will provide PIRE with periodically updated electronic files, stripped of personal identifiers, for analyses. To merge neighborhood data with youth and parent self-report data only a unique internal identifier will be provided to PIRE. This will also facilitate linking data across years.

b. Informed Consent

The JHU PIRC is collecting data on the BPP sample to be used in this project. JHU has received prior approval by the Johns Hopkins University of Hygiene and Public Health Committee on Human Volunteers to cover measures, designs, and procedures used in the second generation BPP intervention trial and longitudinal follow-up. PIRE researchers will submit this secondary analysis project to its IRB for review.

c. Potential Risks and Safeguards

We treat all study data received from the BPP as confidential. There is a small risk of accidental release of records if outsiders were able to access PIRE computers and, in the unlikely event, use school code and birthdates to identify individual participants. In order to guard against this risk, PIRE will receive only data stripped of identifiers and will keep electronic files on password-protected computers, available only to authorized project staff.

d. Potential Benefits

This program of research will have manifest benefits in providing community-based/environmental, public health, and mental health researchers as well as policy makers and local planners with information on community factors linked with violence and AOD exposure. This information may be useful for planning initiatives to improve communities and subsequently decrease youth exposure to violence and AOD activity. Because violence and AOD exposure has been associated with poverty and lower socio-economic status, this study of primarily urban, lower income populations and neighborhoods seeks to increase our understanding of the extent the community influences youthful exposure and to identify possible targets for future preventive intervention efforts.

2. Inclusion of Minority Subjects

For the BPP analyses, the original sample of 678 children, 86.8% (583) are African American. Of the 678 children continuing in the BPP project at middle school, 491 are African American. The remaining are of Euro-American heritage.

3. Inclusion of Women

The original BPP sample included 678 children aged 6 and their families. Of the original sample, data is available at eighth grade on 566 of the original children and their families. Approximately 47% (266) of the sample is female. Analyses will be completed on data received from teachers (approximately 75% of teachers in the State of Maryland are female) and 678 primary caregivers (mothers, grandmothers, other caregivers), most of whom are female.

4. Inclusion of Children

Of the original sample, data is available at tenth grade on 566 of the original children and their families. Neighborhood ratings will be conducted and analyses will be completed on the 316 children who currently reside in Baltimore City, our targeted sampling frame. Only children who live in Baltimore City at the time of BPP assessment will be included in Study 2.

5. IRB Review

Pending.

6. Collaborating Site

The Federal Assurance Number is FWA 00000287 for Johns Hopkins Bloomberg School of Public Health.

F. VERTEBRATE ANIMALS

Not applicable.

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H. CONSORTIUM/CONTRACTUAL ARRANGEMENTS

This project will be conducted by Pacific Institute for Research and Development (PIRE), with contractual serviced provided by the Johns Hopkins School of Public Health, Bloomberg School of Public Health, as indicated in the attached letter.

Dr. Nicholas S. Ialongo, Director of Prevention Research Center (PIRC) at Johns Hopkins University (JHU), will work with project staff regarding BPP data and interpretation of findings. He will participate in data collection training and will also assist in model building for data analysis and manuscript preparation. He will provide 10 % effort during Years 1 and 2 and 20% during Year 3.

Mr. Scott Hubbard, data manager for the PIRC, will prepare a neighborhood data file that contains a unit block for each BPP Baltimore resident. He will also provide a periodic subset of data with selected BPP variables for project analysis. At the completion of each annual BPP data collection, he will provide a final

data file with 11th grade and 12th grade data. He will provide 20% effort during Years 1 and 2 and 10% during Year 3.

I. CONSULTANTS

Dr. Julie Mair, Assistant Scientist, at the Johns Hopkins Bloomberg School of Public Health, will provide consultation regarding the application of the Routines Activities Theory and the Crime Prevention through Environmental Design (CPTED) to the interpretation of findings. She will provide 6 days of consultation each project year.

Dr. Ralph Taylor, Professor at Temple University, will provide consultation regarding disorder and decline in Baltimore City neighborhoods and will assist in the geospatial mapping of Baltimore neighborhoods. He will provide 6 days of consultation each project year.

Dr. Ameilia Arria, Deputy Director of Research at the Center for Substance Abuse Research (CESAR), University of Maryland, College Park, will provide consultation to project staff regarding data related to adolescent health and behavior. She will provide 3 days of consultation each project year.